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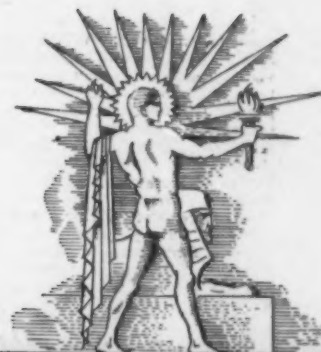
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AUG 25 1931

SCIENCE NEWS LETTER

(X)

THE WEEKLY SUMMARY OF CURRENT SCIENCE.



AUGUST 22, 1931

Good Heavens, Young Lady!

See Page 126

A

SCIENCE SERVICE PUBLICATION

SCIENCE NEWS LETTER

VOL. XX

No. 541

The Weekly
Summary of  Current
Science

Published by

SCIENCE SERVICE

The Institution for the Popularization of Science organized under the auspices of the National Academy of Science, the National Research Council and the American Association for the Advancement of Science.

Edited by WATSON DAVIS

Subscription rates—\$5.00 a year postpaid. 15 cents a copy. Ten or more copies to same address, 5 cents a copy. Special reduced subscription rates are available to members of the American Association for the Advancement of Science.

In requesting change of address, please give old as well as new address.

Advertising rates furnished on application.

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Publication Office, 1930 Clifton Ave., Baltimore, Md. Editorial and Executive Office, Constitution Ave. at 21st St., N. W., Washington, D. C.

Address all communications to Washington, D. C. Cable address: Scienserv, Washington.

Entered as second class matter October 1, 1926, at the post-office at Baltimore, Md., under the act of March 3, 1879. Established in mimeographed form March 13, 1922. Title registered as trade-mark, U. S. Patent Office.

DO YOU KNOW THAT

Tin exposed to extreme cold may crumble to dust.

Louisiana leads the United States in quantity production of furs.

A new method of applying aluminum to iron produces in effect a "rustless" iron.

During about a month in summer the polar regions receive as much heat as does the equator.

Government entomologists uphold one popular tradition: some persons are more attractive to mosquitoes than others.

A metal diving suit, recently produced, is said to enable a diver to descend to a depth of 1,200 feet and to remain under water for a long time.

Scientists of the U. S. Public Health Service are studying the nutritive value of crops, in order to know which food crops are best in different regions for prevention of pellagra.

White was the color of royalty during some stages of Egypt's ancient history.

Luminous rain is a weather phenomenon which has been observed on rare occasions.

Before the World War only about 27 per cent. of the Russian people could read and write; the percentage in 1930 was reported as 62.

Mexico appropriates more money per capita for archaeological researches than any other government.

The sixteenth century alchemist Paracelsus advanced the idea that disease was the result of a disturbance in bodily chemistry.

Young fish in the state hatcheries of Michigan are feeling the depression: their usual diet, which includes beef and sheep liver and other ground-up fresh meats, has been replaced by oatmeal, dried meats and other less expensive foods.

WITH THE SCIENCES THIS WEEK

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Science Service presents over the radio, an address

THE ELECTRICAL TRANSMISSION OF SPEECH

By J. B. Kelly, engineer of the Bell Telephone Laboratories, New York City

Friday, August 28, at 2:45 P. M., Eastern Standard Time

Over Stations of

The Columbia Broadcasting System

ORDNANCE

Army Service Rifle May be Replaced by Semi-Automatic

Two Models Now Undergoing Strenuous Government Test; Survivor is Expected to Improve Recruit's Marksmanship

WITHIN a few months the present U. S. Army service rifle, which has been standard for 28 years, may be abandoned. Along with it, a part of the manual of arms, that phase of army life holding great terror for the new recruit, will pass out of existence.

But there will be a new gun, and a new manual of arms. The new gun, if it satisfactorily passes tests to which it is now being put, will be a semi-automatic rifle, the development of which has seemed imminent for half a century. In spite of the fact that the invention of a satisfactory semi-automatic rifle has for years been thought to be just around the corner, one that fully measures up to the Army's high standards has never been made—unless it be one of the two guns now being given a gruelling final test of severe usage. It is expected that reports on these tests will be issued during the next few months, which, if satisfactory, will result in the adoption of a new army rifle and along with it a somewhat changed manual of arms to take care of the gun's new features.

Chosen from Dozen

One of the two types now being tested was developed by J. D. Pedersen, inventor of the Remington pump shotgun and a number of important arms devices, while the other was made by John C. Garand, who has designed models of great promise for the government. From nearly a dozen models submitted, these two guns were chosen for final tests and twenty of each were sent different branches of the service to be tried out along with the present rifle so that the officers could determine exactly how they would operate and stand up under stress.

If one of these guns is not adopted in its present form, it is likely that it will be returned to the inventor with suggestions for improvements. Whatever their fate, officers generally consider the Garand and Pedersen rifles to

be superior to any semi-automatic pieces they have seen enter tests.

Advantages of the semi-automatic rifle are explained by Major Julian S. Hatcher, of the Ordnance Department, in a report to the American Society of Mechanical Engineering. Major Hatcher first describes the gun now in use.

"The present army rifle," he says, "is what is known as a magazine or repeating rifle. The gun has a magazine in which five cartridges are placed. After one cartridge is fired the mechanism of the rifle is operated by hand, and this manual operation results in ejecting the old cartridge and feeding five live cartridges into the chamber ready to fire.

"The mechanical operation of the gun cannot be performed without considerable muscular effort on the part of the soldier, with resulting motion which is very likely to appraise the enemy of his position. At the very best, the result of this muscular effort is that it causes the soldier to lose his line of sight.

"The self-loading automatic rifle is one that uses part of the energy in the

cartridge to perform these mechanical operations as soon as the trigger is pulled.

"One of the greatest difficulties in training raw recruits to handle a rifle properly is teaching them to smoothly and rapidly execute the motions necessary to throw out the empty cartridge case and put the new cartridge in. If part of the surplus power of the gun is utilized to do this job automatically, it simplifies the training problem; moreover, it renders the user of the rifle more effective because, once having located a point to aim at, all he has to do is press the trigger and if he sees that the shot goes to the right or left he merely corrects his aim and fires again without entirely losing sight of the object as he would if he had to turn up and pull back the bolt of the Springfield rifle to eject the old cartridge case, and then shove the bolt forward and turn it down, to put in the new cartridge.

Against Air Attacks

"The likelihood of aircraft attack on columns of troops in future warfare furnishes a very strong reason for arming our soldiers with a semi-automatic rifle. It is particularly hard to fire several shots in succession at rapidly moving objects, such as aircraft, with accuracy of aim when using a magazine rifle where the bolt has to be operated by hand before every shot."

The self-loading principle has been applied to the machine gun for many years, Major Hatcher points out, but in the machine gun, (*Please turn page*)



OLD AND NEW

The weapon at the top of the picture is Army service rifle now in use. In the middle is the Garand semi-automatic type being tested, and at the bottom is the Pedersen model, the other semi-automatic under consideration by Uncle Sam.

weight is not an important factor. The difficulty lies in making a semi-automatic rifle that will weigh only eight and one-half pounds—the weight of the present army rifle. There are some semi-automatic hunting rifles, but these are

of relatively small power compared with the army rifle.

Semi-automatic rifles have been used to a limited extent by Mexico and Germany.

Science News Letter, August 22, 1931

EXPLORATION

Scientist Protests Ban on Foreign Exploration in China

A VIGOROUS protest and warning that Chinese prohibition of British, French, Swedish and American paleontologic and archaeologic work in Central Asia is a "very serious setback to the cause of science and civilization" is issued by Dr. Henry Fairfield Osborn, president of the American Museum of Natural History, in a statement in *Science*.

Andrews Refused

In announcing that the Chinese Commission for the Preservation of Antiquities has just refused Dr. Roy Chapman Andrews' request for permission to make explorations next year in Mongolia, Dr. Osborn made public the letter of refusal which suggests that the American scientists content themselves with scientific work on specimens that are brought to Peiping by Chinese expeditions.

In addition to bringing to a stop the ten years' work by his museum, Dr. Osborn lists the following expeditions that have been prohibited or hampered:

Sven Hedin's Swedish expedition in Chinese Turkestan.

French Trans-Asiatic Expedition under Dr. Georges Haardt and P. Teilhard de Chardin.

British expedition under Sir Aurel Stein, driven out of Chinese Turkestan.

Dr. Osborn also charges the Chinese commission with instigating erroneous Chinese newspaper statements about foreign explorations, arousing hostile attitudes among the people and cultivating the idea that all foreigners are enemies.

Looting of Chinese antiquities by the American Museum expedition was vigorously denied by Dr. Osborn. Aside from Neolithic flints which are still to be found strewn over the surface of the Gobi desert in millions, not a single specimen of any historical or archaeological value has ever been

taken from China or Mongolia by the expedition. The great majority of the fossils obtained have come from Outer Mongolia over which China relinquished control before the Museum's explorations began. Dr. Osborn contends that the Central Asiatic Expedition "has always paid its way," spending much money in China, in addition to benefiting the country culturally.

"The matter would not be so serious if there were any possibility or prospect of the present ability of the Chinese to carry out this work themselves," said Dr. Osborn. "They have neither the scholarship nor the financial means of doing so beyond the confines of old China."

"The American Museum geologic, paleontologic and stratigraphic and topographic work in Mongolia and the great publications issuing therefrom have been possible only because the party was composed of a body of field experts such as has never been brought together before in the history of these branches of science, under a leader who has shown unprecedented ability to organize a series of expeditions into an absolutely unknown desert where all previous explorers had failed either to make discoveries or obtain substantial results."

Backward Nation

"This arrest of Central Asiatic exploration and research will cause worldwide disappointment and regret, especially among those who have been sincerely desirous of soundly establishing these great branches of science in China. The Commission for the Preservation of Antiquities must, therefore, bear a heavy weight of responsibility for the retardation and finally for the arrest of scientific researches and explorations in Central Asia, whereby China is placed in the column of backward, reactionary and non-progressive nations."

Science News Letter, August 22, 1931



CHEERFUL?

If you're not you ought to be when you look at this little two-inch high perfume pot of the seventh century B. C. At least that is what Dr. Edith H. Dohan, of the Museum of the University of Pennsylvania, says. Reactions to art objects have been observed in the feelings of visitors toward two recent acquisitions of the University Museum. One object is the snail helmet-headed vase pictured above; it evokes a light-hearted and cheerful mood. The other, about nine inches high and made two centuries later, has a much less gay effect than that of the little Rhodian pot. The difference in size may account for the reactions; the smaller object is more "cozy in the hand."

ENTOMOLOGY

Sod Web-Worms Menace Golf Courses In Ohio

LARGE brown patches of dead grass on Ohio golf courses and lawns are not due to the extremely hot weather but a heavy attack by the sod web-worm, entomologists of the Ohio Agricultural Experiment Station have discovered.

Not a new insect, the half-inch long black worm has been encouraged by this year's good insect weather. It lays its eggs in lawn or turf grasses and the larvae hatch in two weeks.

The insect keeps away from clover and fresh green clover plants in the dead grass is a sign of its presence.

Arsenate of lead powder dusted on the grass and soaked in with water will control the pest.

Science News Letter, August 22, 1931

In the search for oil and gas, more than 20,000 wells are drilled annually.

PHYSIOLOGY

Spiral Motion of Organisms Believed to be Key to Sex

Direction of Movement Apparently Determines Differences Between the Plants and Animals Which Have Two Sexes

SEX is a matter of going round in circles in one direction rather than another, reports from the Biological Laboratory at Cold Spring Harbor, N. Y., declare.

Love, people say, makes the world go round, but the motion is in a right-handed spiral, according to Dr. A. A. Schaeffer's experiments.

All organisms move in spirals when they are not specially guided by their senses. Bacteria and blindfolded aviators, experiment shows, behave alike in this respect.

Animals generally show a preference for either right-handed or left-handed motion. It is this spiral motion that Dr. Schaeffer has observed in a great variety of animals, representing some 17,500 different species.

Many simple plants or animals do not have two sexes but reproduce from one individual only. Hermaphrodites, as such are called, often combine the properties of male and female in one individual. Dr. Schaeffer's discovery is that the existence of one or two sexes in the organism is connected quite simply with the preferred type of spiral motion.

Right-handed twirlers, he finds, are generally those with well-marked males and females. Those that prefer to move to the left are sexless or doubled-sexed.

That the direction of this spiral motion tells very fundamental things about the way a living thing is constructed is the belief of Dr. Schaeffer. He suggests that this behavior can be traced back to a spiral formation in the chemical molecules of which the living protoplasm is composed.

The substances of which the life stuff of protoplasm is made up very often show a kind of twist rotation in their structure. Substances of this type may be either left-handed or right-handed, like gloves or an object and its reflection in a mirror.

And it seems to be very important for the purposes of the plant or animal that the chemical compound have

the proper kind of chemical spin or spiral. Thus it is possible that the differences between plants and animals that have two sexes and those that have not is a matter of this twist of the chemical molecules of which they are made.

This twistedness sometimes shows itself in the outward form or appearance of the animal or plant. Is this twist of body in the same direction as the motions of the organism, or isn't there any connection? Dr. Schaeffer asked.

Left in Structure

That, it seems, depends on whether you are dealing with a plant or an animal. The spirals observed in the form of plants, for instance in the way vines climb, are usually in the same direction as the spiral motions in such plants or parts of plants as are able to move. Animals, on the other hand, have their body spiral and motion spiral in opposite directions.

In both cases, however, the smaller and simpler organisms are predominantly left in structure and the higher or more organized members largely right-handed.

For these and other reasons Dr. Schaeffer believes that the cause of this biological dizziness is to be sought in the chemistry of the species concerned.

When the ameba moves in the presence of a fluctuating light, still other characteristic spiral motions are observed.

Of course, a single-celled animal, for instance, sometimes varies the monotony by twisting in the direction contrary to its usual habit just as some people are left-handed though most are right-handed.

In the case of one, at least, of these primordial living bits of jelly a good meal changes the direction from left to right, but after two or three hours the ameba becomes left-turning again.

These experiments give important evidence that the observed characteristics of an organism are correlated with

the positional relationships of their molecules. Dr. Schaeffer's theory brings together many isolated facts on the form and behavior of organisms and opens up fascinating fields for further investigation. His work gives evidence for the long-entertained idea that protoplasm consists of organized molecules.

Dr. Schaeffer concludes that any species of animal has its protoplasm made up of a special type of chemical molecules peculiar to itself and that these molecules are arranged into definite patterns.

Science News Letter, August 22, 1931

BOTANY

General Sherman Tree is Largest Living Thing

THE LARGEST living thing on earth is the General Sherman sequoia tree in Sequoia National Park. A committee of engineers has just completed precise measurements of the big trees of California and has awarded the championship to this tree, with the General Grant tree second.

Over a thousand observations and calculations with precise engineering instruments, showed that the General Sherman giant redwood has a volume of 600,120 board feet, a height of 272.4 feet, a circumference at the ground of 88 feet, and one limb alone has a diameter of 6.8 feet.

The sequoias were measured by engineers representing the California State and Fresno Chambers of Commerce.

Science News Letter, August 22, 1931



THE BIGGEST

No longer any doubt about the matter.

AGRICULTURAL MACHINERY

The McCormick Reaper

"A Classic Invention"

**The Centenary of the Reaper is Celebrated this Year
In the Fields Where it Displaced Cave-Man Agriculture**

*IMPROVEMENT IN MACHINES
FOR REAPING SMALL GRAIN, by
Cyrus H. McCormick, of Rockbridge
County, Virginia. Specification forming
part of Letters Patent dated June 21,
1834. United States Patent Office.*

TO ALL WHOM it may concern:

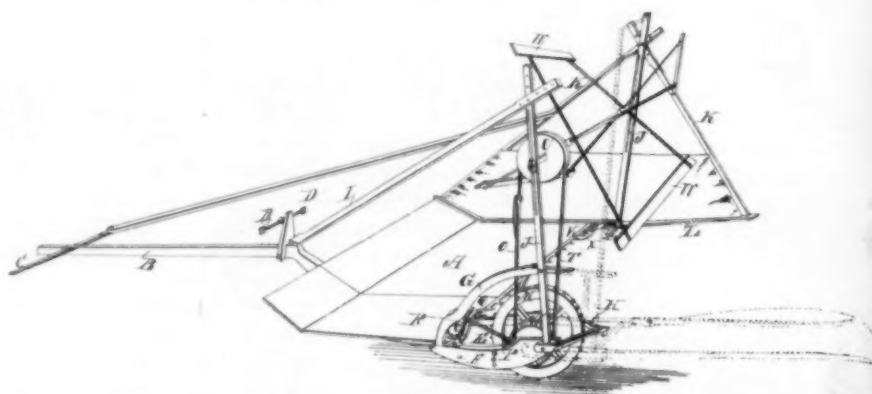
Be it known that I, CYRUS H. MCCORMICK, of Rockbridge county and State of Virginia, have invented a new and useful Improvement in Reaping all Kinds of Small Grain; and I do hereby declare that the following is a full and exact description of the construction and operation of the said machine as invented or improved by me.

Horses Face Platform

Upon a frame of wood is to be constructed a platform of about six feet in width by about four or five in length. From the back of this platform projects a tongue of about ten or eleven feet, to the end of which is secured a cross-bar to attach the single-trees, by which the horses pull with their heads directed toward the platform, near which at a proportionate distance from the cross-bar are fastened to an upright rising from the tongue two hooks by staples to said upright, one projecting toward each horse. These hooks fasten into the hame-hook of each horse, though the machine will be found to work better by using the hook to the left horse, the one ridden by the boy directing their movements. One horse may work the machine from this side by substituting shafts for the tongue. On the right hand of the platform are to project in front two pieces of the frame about one and a quarter foot, and about one foot apart. On each outside of this projection is to be secured a broad piece of wood by a screw-bolt passing through it and the projection of the frame. From the end of this broad piece nearest the platform rises a circular brace projecting forward and

secured to the reel-post by a movable screw-bolt, to allow of advancing or drawing back as the adjustment of the cutting may require. About three-quarters of a foot on the other end is a movable screw-bolt passing through both pieces, also allowing for a rise or fall in adjusting the height of cutting, and at about the same distance farther on is to play an axis of a wheel to be hung between said pieces. At a short distance in front of this axis are to be secured an arm on each side projecting toward the middle, where they are united and serve to throw the stalks of the grain toward the cutting apparatus. This triangle is to be movable on its screw also, and it may be removed altogether for the purpose of inserting shafts, so that the machine may be drawn by one horse in this manner. The two head-pieces are to be lengthened, as also the curved brace projecting toward all of them, about three or four feet. The two broad pieces will be connected at their ends by a bar for the single-tree, and rising from the right-hand one near the end, an upright connects it with the curved brace, and by the side of this upright rises another, secured to its place to a height sufficient to clear the reel. From this top a brace passes across the reel to the opposite post. Below the inner shaft from the single-tree end is secured a

long bow or brace projecting outward somewhat and continuing along the direction of the shaft to the front of the horse, where it passes round and joins to the other shaft, which has been left purposely longer. The object of this bow is to throw the stalks inward toward the cutting apparatus, instead of the triangle removed. Some other braces may be used to strengthen this part of the machine similar to one which must pass from the junction of the curved brace with the reel-post obliquely toward that end of the opposite head-piece nearest the front of the cutter. From the top of the reel-post a brace will also pass to the foot of the upright projection on the tongue. On the opposite side of the machine is another reel-post rising from a projection of the platform and supported by a brace on each side connected to the top by a movable screw-bolt, and extending one to the end of a piece attached to the projection, on the outside of which piece, and rising in the same direction, may be secured a bow, in order to more effectually divide the grain before it comes to the reel from the platform by a movable screw, and extending forward about six feet, serving to regulate the width of the swath; the other brace to the end of the platform next the horses, where, about half-way up, it is joined by another brace, continuing it onto the cross-bar at the draft end of the tongue. This end of the platform is to be closed by a strip of cloth stretched along it, and as high



PATENT DRAWING OF THE MCCORMICK REAPER

as the stalks. The tongue is to be supported by the horses by means of a pole passing across their backs between them, and resting on pad-saddles. From this pole a chain passes to the tongue below and suspends it to the desired height. On the axis hung between the headpieces is a wheel of about two feet diameter, having the circumference armed with teeth to hold to the ground by. On the right of this wheel is another of about thirteen inches diameter, or containing thirty teeth on the same axis, having a width on the circumference for the reception of a band; and on the right side are to be the teeth or cogs working in a smaller cog-wheel of about three and a half inches in diameter, or nine cogs, secured to an axle sloping back toward the front of the platform, where is secured another cog-wheel of about eleven inches in diameter, or containing twenty seven teeth, working into another of about three and a half inches in diameter, or nine cogs, attached to an upright double crank passing from the curved brace down to the broad piece below. These cranks are in a right line, projecting on opposite sides of the axis, and in a line with the front edge of the platform. To the lower of these cranks is attached, by a joint near the crank, having a wooden pin, a long cutter of steel, grooved or notched on its lower edge like a reaping-hook, with the grooves running in a line toward the right of the machine. This blade is attached to the frame-piece below the edge of the front of the platform by movable tongues on slips of metal, the bolt securing it to said frame-piece acting as a pivot, and that through the blade likewise, so that the motion is described in part of a circle. This motion, when the stalks are presented, cuts them through. Above this cutter slides another long plate to the upper crank of the same length, and secured in the same manner; but instead of the fine teeth used in the lower plate these teeth are long—say about one and a half inch, and about the same distance apart. They are to project in a line sloped in an opposite direction to the grooves in the cutters below, and their motion in sliding backward and forward is also contrary, thereby collecting the stalks as they come in contact with these teeth and force them across the teeth in the cutter below, thereby greatly assisting in the act of cutting them through. The crank working this blade may be dispensed with in some cases, and the teeth made fast above the cutter and



HOW THE REAPER LOOKED

From the catalog of the Paris Exposition where the Reaper was Introduced to Europe.
(Photograph by courtesy of Dr. Lewton of the U. S. National Museum.)

bent over its edge and under some distance, so that the cutter will then work against them and produce the same effect.

On the upper end of each reel-post is a groove or long mortise, having a number of holes through to the sides for the reception of an adjusting-pin. On this pin and through the groove works the end of the axis of the reel, having on the right end a pulley of about twelve inches diameter secured to the axis, and worked by means of a belt from the pulley-wheel below on the axle of the wheel working in the ground.

The reel is composed of two or more cross-arms at each end of the axle, projecting about three feet, and connected at their ends by a thin band of about six inches in width, which, by the arrangement of the arms, runs in somewhat a spiral direction along the axis, though it might be parallel, the right end bearing up first upon the grain. This reel, by the motion given by the strap as the horses advance, bears the stalks as they are projected inward by each end of the termination of the plat-

form upon the cutter, and when separated lands them on the platform, which, advancing till sufficient quantity is collected, is discharged as often as may be required by a hand with a rake at the right end of the platform. On the left end of the platform is a wheel of about fifteen inches diameter set obliquely, bending under the platform to avoid breaking down the stalks on an axle, that may be raised or lowered by two movable bolts, as the cutting may require, corresponding with the opposite side. The projection of the frame at this end is made sufficiently wide to bear off the grain from the wheel.

Vibrating Blade

My claim is for the arrangement of the several parts so as to constitute the above-described machine, and I particularly claim the method of cutting by means of a vibrating blade operated by a crank having the edge either smooth or with teeth, either with stationary wires or pieces above and below, and projecting before it, for the purpose of staying or supporting the grain while cutting or using a double crank, and another blade or vibrating bar, as before described, having projections before the blade or cutter on the upper side, both working in contrary directions, thereby lessening the friction and liability to wear, by dividing the motion necessary for one between the two, and improving the principle of cutting by gathering and holding the grain to the cutter, the projections standing at a proper angle to said cutter; also the method of securing them.

I also claim the method of gathering and bringing the grain back to the cutter and delivering it on the apron or

(Turn to page 124)

FOR A CENTURY AND A QUARTER

New Earths of the Cerium Group Have
Been Turning Up as Chemists Refine
Their Methods of Search

FROM CERIUM (1804) TO ILLINIUM (1926)

Their Discoveries will be Described
IN THE NEXT CLASSIC OF SCIENCE

OCEANOGRAPHY

Icebergs May be Grounded Along Coast of Labrador

By DR. OLAV MOSBY
*Oceanographer, U. S. Coast Guard Vessel
 "General Greene."*

THE U. S. Coast Guard's oceanographic vessel *General Greene* has just recently returned from a four-thousand-mile cruise between Labrador and Greenland. Observations of temperature and salinities were made at 122 points in six crossings of the Labrador current and two sections between Labrador and Greenland. These measurements were taken in thirteen levels down to depths of two thousand meters (six thousand feet). We took more than seventeen hundred soundings.

On the Labrador coast about one hundred icebergs were sighted but we made contact with only three of them. Hundreds of bergs must be grounded and are disintegrating along the coast.

Hudson Strait is free of ice and we sighted only three bergs.

Remnants of pack ice and about five hundred icebergs were sighted between Ivigtut and Cape Farewell, on the south tip of Greenland.

Of all the bergs seen, only two were more than sixty miles off shore. The scientific results of the expeditions have not yet been completed.

Science News Letter, August 22, 1931

ORNITHOLOGY

First Eggs of Harris's Sparrow are Discovered

A GAP in the bird study of North America lasting for almost a century has been bridged with what is believed to be the first authentic discovery of eggs of the Harris's Sparrow. Credit for this find goes to the naturalist, George Miksch Sutton, and his associate, John Bonner Semple. Both have recently returned from an expedition to Churchill, Canada, on Hudson Bay, the nesting region of the bird.

Harris's Sparrow, a shy individual with a black hood and white under parts, was one of the few American birds left whose eggs had not been found. Sets of doubtful identification, however, have been preserved and descriptions generally held erroneous, also given.

In reporting his discovery to Science Service, Mr. Sutton said:

"The eggs are not 'creamy-white' (as a previous description states), but are

very pale greenish-blue, spotted, blotched and scrawled more or less all over with brown, lilac, gray and rusty."

It was not until the nineteenth century that the breeding range of the Harris's Sparrow was known. Half the year the bird haunts the Missouri River basin and migrates northward to breed with the approach of spring. The bird was unknown to ornithologists until 1834 when it was discovered near Independence, Mo., by Thomas Nuttall.

The details of Mr. Sutton's findings are expected to be presented at the meeting of the American Ornithologists Union which will be held in Detroit about the latter part of October.

Science News Letter, August 22, 1931

MEDICINE

Fleas Are Convicted Of Carrying Typhus Germs

FLEAS, long suspected of transmitting endemic typhus fever in the United States, have at last been convicted of the offense by conclusive evidence, the U. S. Public Health Service has just reported. The proof that rat fleas are a transmitting agent for the disease was obtained by laboratory tests.

For months, Drs. R. E. Dyer, A. S. Rumreich, and L. F. Badger, of the U. S. Public Health Service have been working on the case, to determine once and for all whether fleas were responsible for spreading the disease, or whether some other agent should be sought. In Europe and Asia, typhus is spread by the body louse, but cases in the United States have occurred where no such source of infection was possible.

In February, the doctors reported that their experiments had reached a point at which it seemed almost certain that fleas are typhus carriers. Now, that belief is confirmed. The proof was obtained by injecting white rats with the virus of endemic typhus, and then putting fleas on them. Six of these fleas were later emulsified and injected into two guinea pigs. Both guinea pigs developed the symptoms of endemic typhus. Other fleas from the infected rats were placed in a new box containing some white rats infected with typhus and some non-infected. In two weeks, one of the rats that had not had the disease was killed and fleas from its body were again treated and injected into guinea pigs, and the disease developed in the guinea pigs. Other experiments added to the evidence of the rat fleas as the carriers.

Science News Letter, August 22, 1931

IN SCIENCE

GENETICS

Deficiency in Taste Found Matter of Inheritance

INABILITY of some people to taste a chemical that is extremely bitter and even nauseating to others is an inherited trait, Prof. L. H. Snyder of Ohio State University has discovered.

Using the chemical para-ethoxy-phenyl-thio-urea with which Dr. Arthur L. Fox of the Du Pont laboratories, Wilmington, Del., discovered the strange difference in tasting ability, Prof. Snyder verified Dr. Fox's conclusion that the taste deficiency actually exists and that it is not a matter of age, sex, nor race.

Then he tested a hundred families with the chemical. In the results which he published in *Science*, Prof. Snyder concludes that the taste deficiency is apparently due to a single recessive gene or bearer of heredity in the hereditary make-up of human beings. It is not sex-linked or influenced by sex as are some other human deficiencies, such as lack of clotting power of the blood.

"When neither parent can taste the compound," Prof. Snyder reports, "none of the children can taste it."

Science News Letter, August 22, 1931

ZOOLOGY

Goldfish Survive Test In Tobacco-Soaked Water

GOLDFISH can be trained to develop a tolerance for the poison of tobacco, but smokers should not therefore feel that any amount they take in is harmless after once acquiring the habit. This is the advice of Drs. Leon Binet and C. Zamfir, French physicians.

Increasing amounts of tobacco-water, made by soaking two grains of good Maryland tobacco in a liter of river water, were placed in the goldfish bowl every other day. On alternate days they got fresh water again. After 51 days the goldfish survived exposure in water so strong that it killed unprepared goldfish in an hour. After 66 days they swam in the extract straight.

Science News Letter, August 22, 1931

SCIENCE FIELDS

MEDICINE

Lack of Iron in Diet May be Cause of Pellagra

LACK OF IRON in the diet rather than lack of vitamin G may be the cause of pellagra, it appears from studies which Dr. Sidney Bliss of Tulane University School of Medicine has reported to *Science*.

The diet of corn bread and molasses on which most of the poor people in the South live is lacking in iron as well as in vitamin G, Dr. Bliss pointed out. Furthermore, all the foods listed as preventive or curative of pellagra because of their large vitamin G content, also contain large amounts of iron. Among these he mentioned beef, liver, egg yolk, and yeast.

Fifty-one persons suffering from pellagra were accordingly given iron by intravenous injection. The results are encouraging, Dr. Bliss reported, although it is still too early to state whether these patients will recover entirely from the disease on iron alone.

Dr. Bliss and associates also studied the effect of iron on dogs suffering from black-tongue, considered by some authorities to be the canine counterpart of pellagra. The dogs were fed on a diet of peas, cracker meal and cottonseed oil. Black-tongue developed in all its severity. When iron was injected into the veins of these animals, but no change in diet was made, the animals promptly recovered.

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PSYCHOLOGY

Noise Does not Always Impair Working Ability

NOISY surroundings may be uncomfortable, but they do not necessarily mean that less work can be done.

The Industrial Health Research Board in London has just summarized its investigations on noise and vibration in field and laboratory.

No experimental evidence is available to show that automatic performance suffers from noise or vibration, the board

reports. However, except with certain "meaningful" noises, both noise and vibration are "disagreeable" and "uncomfortable" accompaniments. A continuous noisy background often seems to have an initial stimulating effect, and this appears to indicate that noise should be looked upon as an adverse condition which is met by unconscious increased effort.

With constructive work involving mental effort fairly consistent slight deterioration is observed, particularly in continued effort. Although so far as the experiments go, the deterioration is barely significant, its consistency seems to point to its being significant "psychologically." Discontinuous noise is more disturbing than continuous noise; "meaningful" noise may be more or less disturbing than "unmeaning" noise according as it is interesting or familiar.

Science News Letter, August 22, 1931

ARCHAEOLOGY

Stone Age Village Site Unearthed in Germany

THE SITE of a village built perhaps ten thousand years ago has been excavated by scientists of the Wallraf-Richarz Museum of Cologne, Germany. Traces of the ancient houses were discovered in a more or less accidental fashion at Mungersdorf, a suburb of Cologne, and the dig has now disclosed what is perhaps the most complete settlement of the New Stone Age yet discovered in Germany.

The village was irregularly oblong in outline, surrounded by a defensive wall and ditch. It consisted of about thirty houses. Most of these were roughly circular, but near one end was a larger rectangular structure, possibly a chief's house or a temple. All the houses were built in the same way: a row of posts set into the ground for the main walls, and the space between filled in with woven wicker covered with clay, forming a wattle-and-daub-surface.

Nothing now remains of the houses except the blackened spots in the yellow clay soil that mark the old post-holes, but these marks stand out in such strong contrast that it is easy to trace the lines of the former walls. Fire-hearth, that once occupied the centers of the huts, and holes that served as food caches and rubbish-catchers are also distinguishable.

Very few articles of human manufacture have been turned up.

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PSYCHOLOGY

Children Like Comedy Best in Motion Pictures

THE COMEDY is the child's first choice in motion picture entertainment, with the feature a close second. Next in order comes the serial.

These preferences and many other facts regarding movie likes and dislikes and the habits of the younger members of the audience were disclosed by means of a questionnaire filled out by 800 children in grades one to eight of the schools in and near Los Angeles, California. The study was made by the Women's Education Club of the University of California.

Most of the children go to the movies once a week during the week-end, but 17.5 per cent. go oftener. They pay ten cents, more than a third of them earning the money. Nearly three-fourths go to the neighborhood theater, and two-thirds go accompanied by adults.

More than half the children are allowed to choose the film they wish to see from "reading about them." They like cowboys and excitement; they do not like to be made sad or frightened.

The pictures from which the child learns something are equally popular with the funny and exciting pictures. Tom Mix is the most popular actor, and Clara Bow the favorite actress.

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ENGINEERING

Four-Wheel Brakes Make New Safety Code Necessary

WIDE INTRODUCTION of four-wheel brakes and tremendous increase in commercial transportation by automobile has rendered obsolete the national safety code for braking systems.

Under a new code, being prepared under the auspices of the American Standards Association, all types of brake and brake testing systems for both commercial and passenger vehicles will be covered; at present only two-wheel brakes on passenger cars are dealt with.

More than thirty organizations of national scope including automobile manufacturers, associations, and technical bodies will cooperate in drawing up the new code.

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MEDICINE

Healing With Maggots

How Clean Larvae of the Blowfly are Carefully Bred To Destroy Disease Germs Rather Than Spread Them

By JANE STAFFORD

LITTLE grubs or maggots crawling in an open wound probably sounds pretty terrible to you, but they are the newest assistants of the modern surgeon.

Actually, it is not as bad as it sounds, although you may have to cultivate your small son's attitude toward worms and bugs and such creepy things, in order to appreciate this latest advance of surgery. As a matter of fact, even small girls, whose distress over insect life is as well-known as Miss Muffet and her spider, make no objection to the use of the maggots in treating their wounds.

The adult reaction, however, is clearly seen in the case of a Cleveland workman. This man was injured during the course of his work for one of the local public utilities companies. The company's surgeon, being an up-to-date doctor, used the maggot treatment to clean up the workman's wound. Now the workman is suing the company, on the grounds that the company's doctor did not treat him properly.

The feeling about maggot treatment is not much different from the feeling your eighteenth-century ancestors had about smallpox vaccination. Even now, a large part of the population objects to vaccination, while another large part goes in heavily for protective vaccination not only for smallpox but for typhoid fever, diphtheria, measles and scarlet fever, while germs of various kinds are being injected to treat a host of other ailments, from colds to rheumatism.

The objection to vaccination came from both physicians and public. The doctors opposed Jenner's method of inoculating against smallpox partly because of jealousy and partly because of fear at so radical a measure. Vaccination or inoculation against smallpox had been tried by various men before Jenner, but none of them succeeded in making it generally popular as he did.

All sorts of arguments against vaccination had to be refuted. Some people did not think it would give protection.

Others thought it was too dangerous. Then there was the idea that it might make human beings take on certain bovine characteristics, because material for the original vaccination was taken from cows suffering from cowpox, the bovine counterpart of smallpox. Children might grow up cow-faced, might grow horns and learn to moo and low, instead of to talk, some of Jenner's opponents argued. Of course, this silly idea has been refuted by the thousands and millions of healthy, normal individuals who were vaccinated in childhood during the last hundred and thirty years.

Forgot Their Fears

While many people talked that way about vaccination when they were in little danger of getting smallpox, they forgot their fears of the method when threatened with the much more frightful disease during epidemics, just as they do today.

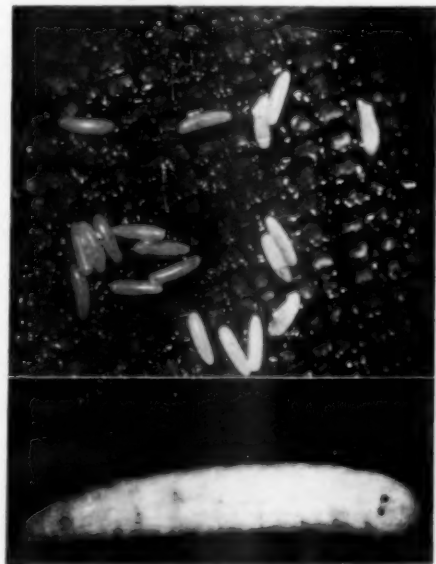
In much the same way, you would probably lose your repugnance to the idea of maggots in wounds, if you were faced with the alternative of a tedious illness, lasting months and years. For the maggots take just six weeks to clear up a condition that otherwise might drag on for months, even with the best medical and surgical care.

The use of maggots, tiny crawling larvae of blow flies, to fight infections in wounds and to clear up the bone disease, osteomyelitis, was developed from observations made during the World War by an American surgeon, Dr. William S. Baer of Baltimore. Dr. Baer was one of the leading orthopedic surgeons of America and at the time of his death in April of this year was clinical professor of orthopedic surgery at the Johns Hopkins Medical School. The maggot treatment will probably not meet as much opposition among physicians as did Jenner's vaccination method, because of Dr. Baer's high standing in the medical profession and the esteem with which physicians both in Baltimore and elsewhere regarded him.

During the war, Dr. Baer served in France as lieutenant colonel in the medical corps. One day two men were brought into his dressing station who had been lying in No Man's Land for seven days without food or water. They suffered from abdominal wounds and from compound fractures of the thigh bone. The wounds were covered with maggots, tiny larvae of flies. The men were hungry, but otherwise their condition was good, Dr. Baer noted.

In the hands of the best surgeons, the mortality for compound fracture of the thigh bone was 80 per cent., Dr. Baer knew. In other words, four-fifths of the persons who suffered from that condition died, even when given expert care. In the hands of the maggots, the mortality for those two men was nothing, Dr. Baer found. Instead of the dangerously bad infections commonly found in such injuries, Dr. Baer found only a few harmless organisms.

Further investigation of this unexpected state of affairs disclosed that the maggots were eating the dead tissues, bone and flesh, and thus destroying the material that would have furnished good breeding ground for bacteria. The bacteria or germs which might have gotten into the wound and set up an



INFECTION HUNTERS

The top part of this picture shows the eggs from which the maggots hatch; below, the full grown maggot, actually about one-half an inch long.

infection were unable to exist in the wound which the maggots had cleaned up.

For ten years after the war Dr. Baer puzzled over these cases, particularly when treating children suffering from osteomyelitis. This disease is an inflammation of the bone, more common in children than in adults. It is the result of an infection which may have its focus elsewhere in the body, as in the tonsils or ears. Or it may result from a local infection in a compound fracture, in which the skin as well as the bone is broken. The condition requires prompt surgical treatment. Recovery is often delayed for years if the disease reaches the chronic stage.

In order to hasten the healing of the wound after operating on this condition, Dr. Baer began using maggots. In six weeks the children were entirely well. Dr. Baer used the method on 300 patients. All the children recovered entirely. With adults the treatment was successful in four-fifths of the cases.

Dr. Baer's faith in the maggots' ability to overcome infections in wounds was strengthened by some investigations with guinea pigs and the deadly gas gangrene germ. Three guinea pigs that became infected with this germ died within 32 hours. Three more guinea pigs were infected in the same way, but after 12 and 24 hours, the infected wounds were opened and the maggots were put in on top of the gas bacilli. Every one of these maggot-treated pigs stayed alive and well.

At first it was thought that the success of the maggots in cleaning and healing wounds was due to scavenger action. The tiny larvae ate up the dead tissue about the wound and the bacteria which had been causing the infection soon died from lack of sustenance. More recently, Dr. Baer thought that something more than scavenger action was responsible for the success of the treatment. He suggested that a specific reaction between the serum of the body and the maggot itself was the probable cause of the healing of wounds to which maggots were applied. Just what this reaction is has not yet been announced.

The investigations with maggots were abruptly halted during the first winter when the cold weather killed the flies in Baltimore and so cut off the supply of maggots. As a result, Dr. Baer started breeding flies so as to insure a

plentiful all-year-round supply of the tiny creatures.

The latest step was the breeding of sterile flies. To a modern surgeon, the idea of putting into a wound anything that has not been sterilized is abhorrent. While the maggots apparently cleared up infections, and no case of fresh infection due to the larvae had occurred, Dr. Baer was taking no chances. Flies and their larvae are commonly associated with filth, and some kinds of flies have been incriminated as carriers of disease germs. So a race of sterile, germ-free flies is being bred and used for the maggot treatment at Dr. Baer's Children's Hospital School.

Since the method has been taken up by surgeons in other parts of the country and at some of the U. S. Veterans' Hospitals, the supply of maggots is not enough to meet the demand. For this and other reasons, the Bureau of Entomology of the U. S. Department of Agriculture has undertaken the breeding of sterile flies and maggots. While the bureau does not expect to supply maggots, it has developed a method of breeding sterile larvae, and is investigating other phases of the situation now.

As carried on at the bureau under the direction of Dr. G. F. White, the maggots are bred in the following way: Eggs hatched from ordinary blow flies, or meat flies, as they are sometimes called, are disinfected chemically. These eggs, which are now considered sterile or germ-free, are carefully put onto sterilized meat in the center of a sterile dish. This dish is surrounded by shavings contained in an outer dish, and there is a cover for the whole affair, with a cheesecloth-covered outlet for gases and moisture. The entire affair is sterile, free from germs.

Feed on Meat

The eggs hatch out into larvae or maggots which feed on the meat for four or five days and then, when full-grown, crawl over onto the shavings. They bury themselves in these shavings where they change into pupae. It is from the pupae that the race of sterile flies is bred.

Pupae, shavings and all, are transferred to sterile cages. In about five days the flies emerge. These sterile flies are fed on sterile food. Eggs obtained from them are disinfected in turn and are carefully transferred to sterile tubes in which they hatch overnight. At the bottom of the tubes is sterilized meat on which the newly-hatched larvae or maggots get their breakfast. These mag-



THE LATE DR. BAER

The distinguished American surgeon who discovered the healing role of maggots during the World War.

gots are then tested for sterility or freedom from germs, and at this stage are ready for the surgeon to use.

The flies, Dr. White explained, are only relatively sterile, but the maggots are absolutely germ-free according to careful bacteriological tests.

The flies are fed on approved diets, with a plentiful supply of vitamins, and investigations are now being made to determine whether they will need ultraviolet ray treatment during the winter. Their food consists of meat and bananas, this being their favorite fruit, and water. All of it is kept free from harmful germs or bacteria before being put in the cages. A cabinet in which the temperature and humidity are kept just right, and into which filtered, clean air is pumped, has been devised, so that the breeding can go on at any time of the year.

Maggots may be obtained commercially now for this treatment. The cost is \$7.50 for enough maggots for one treatment. While this seems high, in view of the fact that treatments are given every five days for six weeks, it is not much if the cost of the usual course of the illness, which may be months and years, is considered.

The maggots are applied directly to the wound. They are about one-half inch long and can stretch a bit longer. They burrow down into the wound, just as they would burrow into the ground, breathing through two spiracles

at their rear end. The wounds are kept covered with a bit of wire gauze, the whole arrangement looking somewhat like a cage.

The greater success obtained with children in this treatment was largely due to the better cooperation of the children, Dr. Baer thought. Adults are more squeamish than children, and for this reason, or because of some pain attendant on the first day or two of the treatment, often would not allow the maggots to be kept on the wound long enough to be effective.

The success of the treatment depends on the maggots staying in the wounds, but sometimes they get up around the edges. They cannot stand light, however, so Dr. Baer gave each of his little patients at the Children's Hospital School a flashlight, and taught them to chase the maggots down into the wound by turning the flash on them. The children thought it great sport, he reported.

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PHYSICS

Molecules From Caesar's Last Gasp Still Being Inhaled

THE NEXT TIME you breathe you will probably inhale a dozen molecules of air that left Caesar's lungs 2000 years ago with his dying gasp, "Et tu, Brute?"

This is one of the striking illustrations used by Dr. A. H. Compton, Nobel prize physicist, in a radio talk given over a nation-wide network of the Columbia Broadcasting System and sponsored by Science Service.

Dr. Compton, who is professor of physics at the University of Chicago, wanted to emphasize the fact that atoms are small, so small, he said, that in a little thimble filled with helium gas at atmospheric pressure the number of atoms is about "one with nineteen ciphers after it." In spite of the fact that in the intervening milleniums the air from Caesar's last breath has been blown around the world in ocean storms, washed with rains, warmed by sunshine and dispersed to the ends of the earth, Dr. Compton told his hearers the chances are there was still a small fraction of these molecules in each room where they were listening to the radio.

"Perhaps the best way to find out how something is made is to look at it," Dr. Compton said. "If it is like a watch we can hold it in our hands. This is comparatively easy. If it is the cell structure of a muscle that we wish to examine, we put it under a microscope. By using ultraviolet light of a wave length shorter than ordinary light, we can photograph such things as typhoid bacilli with increased sharpness. But atoms are too small even for this.

"Now X-rays have a wave length only

a ten thousandth that of light, and if we could use them in a microscope it would be possible for us to observe even the tiny atoms. Unfortunately we cannot make lenses that will refract X-rays, and if we could our eyes are not sensitive to X-rays. So it would seem that we should never be able to see an atom directly."

Although scientists have not been able to look at an atom, it was explained, by round about methods they have been able to get the same information concerning this tiny particle of matter as if they could see it directly

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FROM PAGE 119

platform by means of a reel, as described above, movable to any height required to suit the grain, and the platform to hold the grain until a sufficient quantity shall have been collected for a sheaf, more or less. Likewise the mode of changing the machine for cutting either high or low, as described above; also the method of dividing and keeping separate the grain to be cut from that to be left standing, and the method of attaching the tongue, when behind, to the breast of the horse, to enable him to guide the machine with accuracy.

In testimony that the above is a true and correct description of the use and construction of my machine as invented by me I have hereunto set my hand this 19th day of June, 1834.

CYRUS H. McCORMICK.

Witnesses:

HENRY STONE, ROBT. CLARK.

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GREAT SPORT

Is what children think of the idea of using a flashlight to chase maggots down into the wound.

MATHEMATICS

Ruler-Compass Angle Trisection Impossible

TRISECTING the angle with ruler and compass alone is just as impossible today as it was in the days when the ancient Greek mathematicians worried over the problem centuries ago, mathematicians have commented in connection with recent reports that this problem had been solved.

A simple exercise in the theories of numbers which is worked by juniors and seniors in college mathematics courses demonstrates the impossibility of trisecting angles in general without the use of complex curves. There are a few special angles that can be trisected by use of the straight line and circle alone. When claims are made that the angle has been trisected by plane geometry, it turns out that one of these special angles has been used or there is some mistake in the work.

During the centuries many thousands of attempts have been made to solve the trisection problem.

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PALEONTOLOGY

Tertiary Age Sugars Prove Fresh Enough to Support Life

SUGAR that has been aged in amber for scores of thousands—possibly hundreds of thousands—of years, and is yet fresh enough to supply food to living plants, has been studied in Berlin by Prof. Johannes Gruss, well-known German researcher on the evolution of yeasts and fungi.

The microscopic traces of sugar were always found in connection with insects that had been trapped in the amber while it was still oozing from the pines on the ancient Baltic shores, as a soft, sticky resin. Buried in the silt, the resin slowly fossilized into amber, preserving insects, bits of flowers and chemical substances caught in its airtight substance.

The insects responsible for the presence of sugar in the amber were always either bees or butterflies, which are honey-gatherers, or aphids, which suck sap out of green shoots and leaves and convert it in their bodies into a sweetish stuff called honey-dew, eagerly sought by ants. In their struggles as they sank into the tangle-foot resin in which they were trapped, these insects apparently exuded some of the sugary fluids, which after losing their water through evaporation remained as nearly pure sugar.

The amber specimens examined by Prof. Gruss were all of Tertiary geologic age, and he estimates them to be from 60,000 to 80,000 years old. This estimated age will be regarded as exceedingly conservative by many geologists, who are willing to accept a time period as great as a million years since the close of the Tertiary. Whatever may be their age in years, Prof. Gruss' sugar samples are probably the oldest sugars yet discovered.

However, old as they are, these sugars have shown themselves to be quite serviceable as food. Many of the amber sections which Prof. Gruss was examining at the Berlin Museum of Natural Science became mouldy with two species of fungi feeding on the contained sugar. One of the species was new to science, and has been named *Cladosporium circinalis*. This mould grew only on the sugars left in the amber by perishing aphids.

Prof. Gruss, who attracted consider-

able attention some time ago by studies of yeast cells in 4,000-year-old Egyptian beer jugs, was hunting for yeasts still older when he began his researches on amber. He found them in great abundance. Most of them were flower-yeasts, found then as today mainly in the nectars of flowers, and carried from one flower to another on the mouthparts or heads of visiting insects.

These ancient flower yeasts were very similar to their modern descendants, tending, however, to be smaller in size and simpler in organization. As adaptations to insect travel, they formed their chains of cells into crosses, anchors and other figures that would catch and cling to the insects hairs. Besides the true flower yeasts, Prof. Gruss found a number of other yeast species and several moulds.

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PSYCHOLOGY

Triangles Best Recognized From "Tail of the Eye"

WHEN road signs are placed along a highway so that motorists may glimpse them from the "tail of the eye" while their attention and vision are fixed on the road and its traffic, does it make any difference what the shape of the signs may be?

It would seem that it does from the results of an experiment conducted in the psychological laboratory of Northwestern University by R. M. Collier under the direction of Dr. Franklin Fearing. The shape of a sign is often used as a symbol to convey some information to the motorist, such as a curve ahead. But all forms are not equally well identified without turning the head or eyes to look directly at them.

Mr. Collier found that the triangle was recognized from the tail of the eye more often than any other of the shapes experimented with, and the square came next. On the other hand, the triangle was recognized only when it was comparatively near the point on which the vision was fixed. The other shapes were identified throughout a wider field of vision, and the octagon and hexagon led in this respect.

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METEOROLOGY

Crops Wrecked as Drought Center Shifts to Northwest

DROUGHT, the foe of agriculture, has shifted its center this year and drawn in its parching arms. In the central valleys of the country, where last summer a continual blazing sun made conditions the worst, rain now falls; and this time in the northwest, unyielding skies have been seen the longest. But the stricken area is less than was the drought focus of 1930, Joseph B. Kincer of the U. S. Weather Bureau has found, and the country as a whole is faring better.

Montana, Minnesota, and the Dakotas, after experiencing their driest winter, have been getting a double dose of heat and lack of precipitation. Since January 1 the rainfall in these states has been about a third below normal. For the six-months period, figures from the U. S. Weather Bureau show, North Dakota averaged 60 per cent. of the normal rainfall while for the same period in 1930 its average was 92 per cent. normal. For Montana the average is 51 per cent. during the past six months as compared with 73 per cent. normal for the time last year.

Twice As Much Cotton

That the drought is serious in the north central and western states, is shown by the fact that for the month of July alone 200,000,000 bushels of the nation's corn crop have been lost. Heavy drops, ranging from 4 to 137 million bushels, have also been reported in July for oats, barley and other small crops, while the decrease in the spring wheat yield is the greatest on record.

In contrast to these losses, Arkansas, probably the worst sufferer during last summer's dry spell, is having bumper crops—twice as much cotton as last year—and the rainfall average has jumped from 19 per cent. of normal for July, 1930, to 157 per cent. of normal for the same month this season.

Pasture lands are feeling the grip of the present drought most keenly. From Ohio westward, Mr. Kincer says, at least a third of the states have the poorest or next to the poorest pastures on record. As the center of this summer's drought area, South Dakota has the poorest pastures in the state's history,

and with the exception of two or three states in the past, is harder hit in this respect than any other state in the country in any year.

Mr. Kincer explained that in its entirety the United States was not suffering from the drought as much as during last year because the drought center is considerably smaller this year and because the rains, though few in comparison with normal years, have been well distributed and have come at intervals necessary to keep crops in general from failing.

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ZOOLOGY

THE GIRL ON THE COVER

HER name is Janet Penserosa. She is about four years old and her home is at the New York Zoological Park. And now she can claim the distinction of being the first female gorilla to survive in Gotham's animal center. Not only that but she is probably the only gorilla that has stayed out of doors during the day for an entire year in the North Temperate zone. Her attendant let her play in the snow and she liked it.

Charles V. Noback, veterinarian of the park where Penserosa lives, has told interestingly of how he saw to it that pneumonia, the nemesis of baby gorillas brought to this country, didn't carry his charge away. Penserosa, as she is called because of her serious and pensive nature, was taken from Central Africa by a clergyman in the summer of 1928, and given to the New York Zoological Society.

Miss Janet, as she appears on the cover, is suffering, as the saying goes, from either the weather or the company. It probably isn't the latter because her ally in time of distress and continual playmate is another young lady, a jovial, light-hearted chimpanzee, named Ellen Allegra. They have a grand time together.

Janet was sickly when she first came to the park, but a steady diet of fruit, vegetables and cod liver oil has made her plump (stylishly so) and healthy. And does she like bananas!

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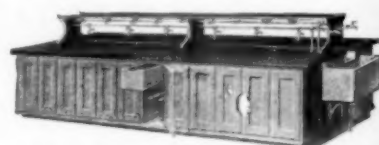
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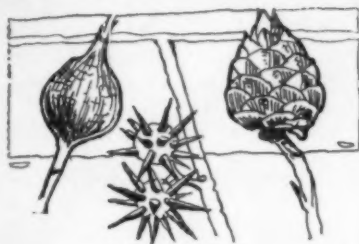
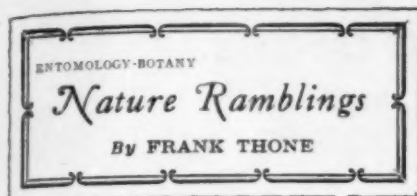
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Galls

IF IT BE TRUE that the pen is mightier than the sword, we shall have to credit the sting of a tiny insect with changing the course of history, not once but many times. For until the invention of modern synthetic inks, all the writing ink in the world came from the swellings in oak leaves we know as galls, and leaf-galls are caused by the sting of a tiny wasp-like insect, which thus irritates the tissues of the oak leaf to make a home for the little larva that will hatch from an egg she deposits at the same time. Oak galls were a common article of commerce during antiquity and the middle ages, and no monastery *scriptorium* was complete without a jar of oak galls steeping on a shelf or windowsill. Even yet, our common inks are chemically the offspring of this old monastic ink; they are gallates of iron.

But oak leaves are not the only plant tissues irritated into hypertrophic growth by the stings of insects. The number of gall insects is legion, and the plants in which they make these bulbous homes for their offspring run pretty well through the whole catalog of Linnaeus. There is no place in the world, jungle or desert, cultivated field or tundra, where you cannot find some kind of galled stem or leaf.

Some of the galls are very plain and unpretentious—simply utilitarian bulges in stem or leaf. Others are very characteristically shaped, with prickles, or horns, or scales, or leaf-like outgrowths. A sufficiently skilled entomologist who has made more or less of a specialty of this department of his science can look at a gall and tell immediately what kind of an insect made it. Or if he has the insect in hand, he can predict what kind of a plant it would seek as a nursery for its young, and what kind of galls it would cause on it.

Science News Letter, August 22, 1931

BIOLOGY

Chinese Breed Hens to Lay Eggs Weighing Quarter-Pound

CHINESE experimenters are trying to recover an old strain of hen that used to lay eggs as big as two.

Such a fowl existed in southern Manchuria, but Chinese farmers carelessly crossed it with other breeds that laid more but smaller eggs. Eggs were always sold by number and not by size. Now the big-egg-laying strain is all but lost, and has been preserved only by some fanciers in parts of China. The fowl is native to parts of the Japanese-leased zone of Hishikwa, and of Fuh-sien and Chauanhou-hsien, all in China.

The existence of hens' eggs so big that one alone would make a breakfast for a hungry man has been reported to the American Genetic Association by Taiji Kohmura of the Agricultural Experiment Station at Kungchuling, southern Manchuria. Mr. Kohmura was able to collect 25 of these hens and eight roosters with which to begin his breeding work. They were big-bodied, big-legged fowl, buff or brown in color and with varied markings.

The first hens did not give such remarkable results. Only three of them laid eggs that weighed as much as three ounces. Two ounces is an average weight for an American egg. But when Mr. Kohmura hatched new chickens from the best of the first eggs, he produced one pullet that laid eggs which

averaged three and one-half ounces each. The biggest single-yolk eggs she laid weighed four ounces, or a quarter of a pound, and a two-yolk egg, five ounces.

But the objection of the Chinese farmers was borne out. The biggest-egg-laying hens laid very few. The pullet whose average egg weighed three and one-half ounces laid only 77 in a year. Another pullet whose average egg was a fraction under three ounces laid 136 eggs in a year. But Mr. Kohmura thinks he can bring up the number as well as the size, for the experiment is still new.

The average weight of a grown hen of the flock is about six and one-half pounds and of a grown rooster, nine pounds. The average age of the pullets when they began to lay was about 219 days. They are fairly good winter-layers, but stop early. The hatchability of the eggs is very low, too. Only 72 per cent of the eggs are fertile, and of those somewhat less than half hatch out, whether because of size or other reasons is not yet known. But all these things Mr. Kohmura hopes to improve.

Science News Letter, August 22, 1931

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• First Glances at New Books

Psychology

THE PRINCIPLES OF PSYCHOPHYSIOLOGY, VOL. II SENSATION—Leonard T. Troland—*Van Nostrand*, 397 p., \$4. The present volume is the second of a proposed series of four, but it is so written that it may be used by itself as a complete text on sensation. The author has endeavored to present a compromise between the behavioristic and the introspectionistic schools for he believes that "a psychology by pure introspection is possible and necessary. But I do not believe that a purely introspective psychology can be made valuable unless it is correlated with the facts which the behaviorists are emphasizing. Either extreme in method yields a result which is not only less than the facts, but something which, by itself, is practically worthless."

Science News Letter, August 22, 1931

Education-Radio

PRESENT AND IMPENDING APPLICATIONS TO EDUCATION OF RADIO AND ALLIED ARTS—Committee on Engineering Developments—*National Advisory Council on Radio in Education*, 94 p. Of interest to educators who wish to make use of this latest aid to education. A chapter on television and one on sound motion pictures are included.

Science News Letter, August 22, 1931

Ethnology

RACES OF AFRICA—C. G. Seligman—*Henry Holt*, 256 p., \$1.25. A well-arranged and simply-written little book by the professor of ethnology at the University of London. Professor Seligman gives the essential facts about different tribes, from Bantu to Hottentot and from Tuareg to Hamite. "It is an interesting little book as well as an informative one."

Science News Letter, August 22, 1931

Child Study

THE CHILD FROM ONE TO SIX—Marjorie F. Murray, Martha M. Eliot, and others—*Government Printing Office*, 150 p., 10c. A very practical handbook for parents of pre-school children.

Science News Letter, August 22, 1931

Psychology

HOW TO INTERVIEW—Walter Van Dyke Bingham and Bruce Victor Moore—*Harper and Brothers*, 320 p., \$4. How can the lawyer make a witness clearly tell the truth? What devices

will aid the social worker to gain the confidence of those she wants to help? What should the job-seeker do to be most successful interviewing a prospective employer? How should a newspaper man go about eliciting pertinent information from a reluctant informant? On these and many other similar problems this volume presents a world of helpful information, which has been gathered from an intensive and scientific first-hand study of interviewing technique.

Science News Letter, August 22, 1931

Psychology

CONTEMPORARY SCHOOLS OF PSYCHOLOGY—Robert S. Woodworth—*Ronald*, 232 p., \$2.50. A discussion of the various schools of modern psychology, including the existential school, behaviorism, Gestalt or configuration psychoanalysis and related schools, and purposivism or hormic psychology, written by one who himself tries to keep free of all of them in a path down the "middle of the road."

Science News Letter, August 22, 1931

Archaeology

NEW LIGHT ON ARMAGEDDON—P. L. O. Guy—*University of Chicago Press*, 68 p., \$1.00. This is the second provisional report (1927-29) on the Oriental Institute's excavations at Megiddo in Palestine. Among the high lights of the report are the air views taken by means of a camera suspended from a balloon; also the theory that King Solomon's trade in horses at Megiddo may have a direct bearing on the Egyptian invasion in the fifth year of Rehoboam's reign. Added to the report is a chapter on "An Inscribed Scaraboid," by W. E. Staples.

Science News Letter, August 22, 1931

Aeronautics

GLIDING AND SOARING—Percival White, Mat White—*Whittlesey House*—227 p., \$2.50. An authoritative book on what is at the same time one of the oldest and newest aeronautical sports.

Science News Letter, August 22, 1931

Psychology

FREUD AND HIS TIME—Fritz Wittels—*Liveright*, 451 p., \$4. Not so much a book about Freud as one dedicated to him. Freud's time is our time, and the thoughtful reader whether he is a psychologist or not will find much of interest in the volume.

Science News Letter, August 22, 1931

Engineering

PRINCIPLES OF CITY PLANNING—Karl B. Lohman—*McGraw-Hill*, 395 p., \$4. A book that should be read by all who are interested in making their city a better place to live in. It is one of the few texts covering the whole field of city planning. Copiously illustrated.

Science News Letter, August 22, 1931

General Science

OBJECTIVE TESTS IN GENERAL SCIENCE—James R. Wilson, Edgar F. Van Buskirk, and Edith L. Smith—*Houghton Mifflin*. Questions of the true-false, completion, multiple-choice, multiple-recall, and matching type to accompany the Van Buskirk and Smith text, "The Science of Everyday Life."

Science News Letter, August 22, 1931

Aeronautics

ELEMENTARY APPLIED AERODYNAMICS—T. G. Whitlock—*Clarendon Press*, 240 p., \$4.50. A concise but comprehensive text for students of moderate mathematical ability and attainment. The book fills neatly the gap between popular books and advanced mathematical works. Serious students of aerodynamics will like this text.

Science News Letter, August 22, 1931

Psychology

A HANDBOOK OF CHILD PSYCHOLOGY—Edited by Carl Murchison—*Clark University Press*, 711 p., \$5. Contains 22 chapters of widely different phases of the subject, each written by a prominent specialist. Anderson, Buhler, Goodenough, Gesell, and Terman are among the contributors.

Science News Letter, August 22, 1931

Biography

NOGUCHI—Gustav Eckstein—*Harper*, 419 p., \$5. The story of the famous Japanese scientist's life was sufficiently interesting not to have needed dressing up with the tricky style of writing used by this biographer—a style which becomes unbearable before finishing.

Science News Letter, August 22, 1931

Aeronautics

SPEED—Frank Hawks—*Brewer, Warren & Putnam*, 315 p., \$2.50. The literary slipstream of the speedy pilot who, after crossing the American continent in a little more than twelve hours, has surprised Europeans by flitting back and forth between their capitals at high speeds.

Science News Letter, August 22, 1931